CLAIMS

1. A method for image compression while maintaining high resolution in selected areas within said image, comprising:

    a) representing an acquired image by a two dimensional array of MxN pixels;

    b) dividing said array into blocks of identical rectangular areas, each of said blocks containing AxB pixels wherein $A<M,N$ and $B<M,N$ and $M=m*A$ $(m=2,3,...)$; $N=n*B$ $(n=2,3,...)$;

    c) storing data related to the division of said array into blocks;

    d) defining a pixel attribute value that can be represented by an analogue value;

    e) determining a threshold level for said pixel attribute value;

    f) calculating a represented value for each block and storing said represented value;

    g) comparing the represented value of each block to the represented value of its adjacent blocks;

    h) whenever the difference between two adjacent compared blocks is greater then said threshold level and as long as the block size is larger than one pixel, performing the following steps:

    h.1) dividing said adjacent compared blocks into sub-blocks, each of which containing A/2xB/2 pixels and storing data related to the division of said adjacent compared blocks into sub-blocks;

    h.2) calculating the represented value for each sub-block;

    h.3) comparing the stored represented value of each sub-block to the stored represented value of its adjacent sub-blocks; and

    i) whenever the difference between two adjacent compared blocks or sub-blocks is lower than, or equal to, said threshold level, representing said blocks or sub-blocks by representative pixels with identical attribute level which is equal to the represented

value of the pixels that correspond to said compared block or sub-block, thereby compressing said image.

2. A method according to claim 1, wherein the attribute value is the pixel's intensity and/or any pixel's attribute that can be represented by an analog value.

3. A method according to claim 1, wherein the represented value of a block is the average value of the attribute value of the pixels in said block.

4. A method according to claim 1, wherein the represented value of a block is the variance of the attribute value of the pixels in said block.

5. A method according to claim 1, wherein the represented value of a block is the standard deviation of the attribute value of the pixels in said block.

6. A method according to claim 1, wherein the represented value of a block is the difference between the maximal pixel's attribute value and the minimal pixel's attribute value in said block.

7. A method according to claim 1, wherein the stored represented value is an analog value.

8. A method according to claim 1, wherein the stored data related to the division of said array into blocks and/or into sub-blocks is a digital value.

9. A method according to claim 1 or 8, wherein the stored data related to the division of said array into blocks and/or into sub-blocks comprises indications that corresponds to location of said blocks or sub-blocks in the two-dimensional array.

10. A method according to claim 1, further comprising coding the compressed image by the representative pixels and the stored data related to the division of the array into blocks and/or sub-blocks, prior to the transmission of said compressed image.

11. A method according to claim 1, wherein the image compression is carried out in real-time by performing the following steps:

   j) reading a group of rows from the two-dimensional array, which corresponds to a block dimension;

   k) concurrently or parallely, compressing the portion of said image that corresponds to said group of rows and reading the next group of rows from the two-dimensional array, which corresponds to the dimension of another block;

   l) repeating steps j) and k) above until all the rows of said two-dimensional array are read.

12. Apparatus for image compression (400) while maintaining high resolution in selected areas within an image, comprising:

   a) a two-dimensional array (300) of MxN pixels;

   b) a data storage bank for storing a group of pixels from said array;

   c) sensor means (401) for sensing the analog values defines as the pixels attributes;

   d) circuitry for calculating a represented value from said attributes (403) for said group of pixels;

e) a set of one or more comparators (405) for comparing the difference between the represented value of said group of pixels and the represented value of another group of pixels, to a predetermined threshold value;

f) circuitry for storing data (404) that represent one or more adjacent groups of pixels, for which said difference is not greater than said represented value; and

g) control circuitry (410) for controlling data transfer between said two dimensional array and the said data storage bank, for controlling the operations of said calculating circuitry, for controlling the operations of said set of one or more comparators and for controlling data transfer into said storage circuitry.

13. Apparatus according to claim 12, wherein the data storage bank is a capacitor bank (402).

14. Apparatus according to claim 12, wherein the attribute value is the pixel's intensity and/or any pixel's attribute that can be represented by an analog value.

15. Apparatus according to claim 12, comprising circuitry (404) for storing one or more analog values and/or circuitry (404) for storing one or more digital values.

16. Apparatus according to claim 12 or 15, further comprising circuitry (404) for storing data related to the division of said array into blocks and/or into sub-blocks, and/or indications that corresponds to location of said blocks or sub-blocks in the two-dimensional array (300).

17.   Apparatus according to claim 12, further comprising circuitry (406) for coding the compressed image by the representative pixels and the stored data related to the division of the array into blocks and/or sub-blocks, prior to the transmission of said compressed image.

18.   Apparatus according to claim 17, further comprising circuitry (407) for transmitting the coded compressed image.